Statement of Dr. E.L. Wynder, 1967 Senate Hearings.



...on, Dr. Moore.
... Dr. Ernst L. Wynder, associate member, ... ancer Research.
... r. Your entire statement will appear in ... ed as you wish.

...' BY DR. WYNDER

...ast 15 years, I have been engaged in epi... studies of cancer, including that of the pu... tory tracts. Within the framework of ... ...ates and I have paid particular atten... ...hip of tobacco to the development of can... ...ental animal.

...le to attend these Senate Commerce Com... ...s made toward a less-hazardous cigarette. ...e to the American public and one in which

...n...al's Committee on Smoking and Health ...g ... contributing significantly to ill health ...arly in connection with cancer of the upper ...y tracts, chronic bronchitis and emphysema, ...ase. The committee summarized its find... ...cigarette smoking is a health hazard of suffi... ...United States to warrant appropriate remedial ...n General's Report on the health consequence ... ... expanded on the basic conclusions of the

...gical studies carried out at the Sloan-Ketter... ...s which are in full agreement with these con... ... of the mouth, esophagus, larynx, lung, ... ...udies at our institute, and those by other ...support to epidemiological findings by show... ...condensate can produce cancer in a variety of ...s.

...on ... fore this committee is whether the harmful ...king can be diminished by the development of ...arette. This subject falls into the category of ...ted by the Surgeon General's Report of 1964. ...dle ...esearch in our laboratory has been directed ...morigenic, ciliatoxic, and mucous-coagulating ...obacco smoke, and the particulate phase of to... ...ec...ribute to their carcinogenic and ciliatoxic ...for ...eans by which such agents may be reduced ...e reviewed our data and those of other inves... ...ations which we are submitting for your atten... ...ub...shed detailed data indicating how specific ...ar...e reduced, in the one case by a modification ...in the other by altering the combustion process. ...able, we suggest various methods that may be ...ma...genicity and toxicity of cigarette smoke, at ...n ...perimental setting. You will note it includes ...ro, treatment of tobacco, tobacco additives, blend-



ing, proportions of tobacco, homogenized leaf, stems, tobacco cut, porous paper, smoke filtration. Modifications in the tobacco selection, tobacco treatment, as well as a selective reduction through additives, use of tobacco sheets, and its optimum cut-packing-density ratio.

We have been concerned with the reduction of ciliatoxic agents through tobacco selection, selective filtration, and modification of combustion.

Some of these steps are too technical to be detailed here, but certainly there is a wide range of possible procedures. Although it still needs to be established that these measures will reduce adverse effects on man, there is general agreement about the desirability of an overall reduction of particulate matter from the smoke of cigarettes. Such a reduction can certainly be accomplished today by using selected tobacco strains and reconstituted tobaccos, enhanced combustion, as well as by utilizing effective filters.

Our studies have shown that the greater the number of cigarettes smoked by an individual, the greater his risk of being adversely affected by smoking. The data on figure 1 shows the results of a study we have conducted at the institute. You will note the risk of the individuals smoking less than 10 cigarettes is relatively small, and this is a point that was already made by previous speakers. You will also note that the risk to pipe and cigar smokers is relatively low, we believe due to the fact that cigar and pipe smokers but rarely inhale.

It should be noted, however, that a specific threshhold level at which no risk occurs cannot be deduced from the data. A dose response to tobacco smoke condensate has also been shown by animal studies, figure 2, and these data will closely correspond to those data just shown by Dr. Moore.

I agree with the conclusions of the Surgeon General's Report of 1964, that "there is a preponderance of evidence that the 'tar' and nicotine levels represent an adequate measure of dosage," and that a reduction in dosage is likely to be followed by a reduction in risk.

Upon examining the "tar" and nicotine yields of filter and nonfilter cigarettes, we and other investigators have found significant differences between various American cigarettes. Although the smoke condensate yield of some filter cigarettes is relatively low, a few yield as much as or even more "tar" and nicotine than nonfilter cigarettes. One certainly should expect filter cigarettes to be lower in the yield of "tar" and nicotine than nonfilter cigarettes. The effect of selective reduction of some gaseous components by certain filter materials, a reduction which we and others have shown to be quite feasible, is difficult to evaluate at this time since evidence of the effectiveness of such measures is based entirely on animal experiments. As may be expected theoretically, the selective removal of carcinogenic aromatic hydrocarbons is not possible by filtration alone, as has been shown by extensive studies done in our and other laboratories.

The effect of enhanced combustion is also measured at present entirely in the experimental setting. Nevertheless, it appears important to reduce substances, such as polynuclear aromatic hydrocarbons, that have been found to be environmental carcinogens to man and more complete combustion of tobacco is one step that will contribute to this end. One way in which my associate, Dr. Hoffmann, and I have been